

# INFORME DE ENSAYOS

**Expediente Nº: 14/31700518**

**Fecha** 15/07/2014  
**Página** 1 de 455



## Referencia del peticionario

**AIRFAL INTERNATIONAL, S.A.**  
 C/ Rio Esera, 4  
 50830 Villanueva de Gallego (Zaragoza)

## **El material recibido**

Luminaria LED autónoma para alumbrado de emergencia de tipo permanente y luminaria modelo derivado de tipo no permanente, marca **AIRFAL** modelo **EMELUX**, con identificaciones internas **1798/2**

**Ha sido ensayado y es conforme con las especificaciones aplicadas\* de la/s norma/s**

UNE-EN 60598-1:2009+A11:2009

UNE-EN 60598-2-22:1999+A1:2003+Corr.2006+A2:2008

UNE-EN 50102:1996+A1:1999+Corr:2002+A1/CORR:2002

\*ver especificaciones aplicadas y observaciones en página 4

## Características nominales

Tensión de alimentación (V) .....	: 230
Potencia declarada (W) .....	: 12 (Permanente) / 2,4 (No permanente)
Frecuencia (Hz) .....	: 50/60
Lámpara .....	: FLUORESCENTE 8W
Clasificación .....	: Clase I
Tipo de instalación .....	: Fija
Grado de protección contra la humedad ...:	IP67
Grado de protección contra el impacto.....:	IK07
Batería .....	: Ni-Cd 4,8V 1,5Ah
Flujo luminoso (lm) .....	: 100
Autonomía (h) .....	: 1
Designación luminaria .....	: X 1 AB**E *60 / X 0 AB**E *60

Albert Marginet  
 Responsable Técnico  
 Electrical & Electronics  
 LGAI Technological Center, S.A.

Los resultados que se indican se refieren, exclusivamente, a la muestra, producto o material entregado al Laboratorio, tal como se indica en el apartado de material recibido, y ensayada en las condiciones indicadas en la/s norma/s citadas en el presente documento  
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 Este documento consta de **45** páginas, de las que **2** son anexos

<b>UNE-EN 60598-2-22:1999+A1:2003+Corr.2006+A2:2008</b>	
<b>Luminarias. Parte 2-22: Requisitos particulares. Luminaria para alumbrado de emergencia</b>	
<b>UNE-EN 62031:2009+A1 :2013<sup>1</sup></b>	
<b>Módulos LED para alumbrado general. Requisitos de seguridad</b>	
<b>UNE-EN 50102:1996+A1:1999+CORR:2002+A1 CORR:2002</b>	
<b>Grados de protección proporcionados por las envolventes de materiales eléctricos contra los impactos mecánicos externos (código IK)</b>	
Expediente número..... :	14/31700518
Técnico que realiza los ensayos (nombre y firma) .....	Oscar Martín .....
Verificado por (nombre y firma) .....	Albert Marginet .....
Fecha de recepción .....	06/02/14
Fecha de inicio de los ensayos .....	14/02/14
Fecha de final de los ensayos .....	14/07/14
Peticionario .....	<b>AIRFAL INTERNATIONAL, S.A.</b>
Dirección .....	C/ Rio Esera, 4 50830 Villanueva de Gallego (Zaragoza)
Laboratorio de ensayos .....	LGAI Technological Center, S.A.
Dirección .....	Campus de la UAB Apto. Correos 18 08193 Bellaterra (Barcelona – España)
Descripción del material recibido ... :	Luminaria autónoma de emergencia de tipo permanente
Fabricante .....	AIFAL INTERNATIONAL
Marca .....	AIRFAL
Modelo .....	EMELUX PERMANENTE
Número de serie .....	---
Número de identificación interno .....	1798/2

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

<b>Características nominales del modelo base</b>	
Tensión de alimentación (V) .....	230
Potencia declarada (W).....	12 (Permanente)
Intensidad (A) .....	---
Frecuencia (Hz) .....	50 /60
Fusible de protección .....	Red: --- (A) Otros: -- (A)
Clase de aparato .....	Clase I
Tipo de luminaria .....	Fija
Lámpara .....	LED
Grado de protección IP .....	IP 67
Grado de protección contra el impacto.....:	IK07
Batería .....	Ni-Cd 4,8V 1,5Ah
Flujo luminoso (lm) .....	300
Autonomía (h) .....	1
Designación luminaria .....	X 1 AB**E *60

<b>Condiciones ambientales durante la realización de los ensayos</b>	
Temperatura (°C).....	21,7 – 24,4
Humedad relativa (%) .....	32 - 43

<b>Modelo derivado</b>	
Fabricante .....	AIRFAL INTERNATIONAL
Marca .....	AIRFAL
Modelo y/o referencia .....	EMELUX NO PERMANENTE
Número de serie .....	---
Número de identificación interno ...	1798/2
Diferencias entre modelo base y derivados.....	Modelo base: tipo permanente Modelo derivado: tipo no permanente

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

<b>Características nominales del modelo derivado</b>	
Tensión de alimentación (V) .....	230
Potencia declarada (W).....	2,4 (No permanente)
Intensidad (A) .....	---
Frecuencia (Hz) .....	50 /60
Fusible de protección .....	Red: --- (A) Otros: -- (A)
Clase de aparato .....	Clase I
Tipo de luminaria .....	Fija
Lámpara .....	LED
Grado de protección IP .....	IP 67
Grado de protección contra el impacto.....:	IK07
Batería .....	Ni-Cd 4,8V 1,5Ah
Flujo luminoso (lm) .....	300
Autonomía (h) .....	1
Designación luminaria .....	X 0 AB**E *60

**Especificaciones aplicadas:**

UNE-EN 60598-1:2009+A11:2009  
 UNE-EN 60598-2-22:1999+A1:2003+Corr.2006+A2:2008  
 UNE-EN 62031:2009+A1:2013<sup>1</sup>  
 UNE-EN 50102:1996+A1:1999+Corr:2002+A1/CORR:2002

**Observaciones:**

OBS (1): La conformidad del dispositivo de control del módulo LED, está basada en la declaración de conformidad del fabricante. No se aporta certificado de conformidad según su norma de producto. Los apartados indicados con OBS(1), están excluidos de la evaluación en lo relativo al mencionado componente.

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

**Incertidumbres en las medidas**

La incertidumbre expandida de medida se ha obtenido multiplicando la incertidumbre típica de medición por el factor de cobertura  $k=2$  que, para una distribución normal, corresponde a una probabilidad de cobertura de aproximadamente el 95%. La incertidumbre típica de medida se ha determinado conforme al documento EA4-02.

Temperatura =  $\pm 1$  °CCorriente =  $\pm 1,5$  %Voltaje =  $\pm 0,7$  %Potencia =  $\pm 1$  %Resistencia =  $\pm 2$  %Dimensiones =  $\pm 0,06$  mm**Veredictos de los apartados**

El apartado no se aplica a la muestra ensayada ..... : N(o)A(plica)

La muestra cumple con los requisitos del apartado .... : P(asa)

La muestra no cumple con los requisitos del apartado : F(alla)

Los requisitos del apartado no han podido evaluarse . : N(o)T(estado)

Observación sobre los resultados del apartado (Núm) : OBS(ervación)

**Observaciones generales**

Los resultados que se indican se refieren, exclusivamente, a la muestra, producto, o material entregado al Laboratorio, tal y como se indica en el apartado de material recibido, y ensayada en las condiciones indicadas en la/s norma/s o procedimientos nombrados en el presente documento.

**Garantía de Calidad de Servicio**

**Applus+**, garantiza que este trabajo se ha realizado dentro de lo exigido por nuestro Sistema de Calidad y Sostenibilidad, habiéndose cumplido las condiciones contractuales y la normativa legal.

En el marco de nuestro programa de mejora les agradecemos nos transmitan cualquier comentario que consideren oportuno, dirigiéndose al responsable que firma este escrito, o bien, al Director de Calidad de Applus+, en la dirección: [satisfaccion.cliente@applus.com](mailto:satisfaccion.cliente@applus.com)

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
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22.2 (0)	GENERAL TEST REQUIREMENTS		---
22.2 (0.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
22.2 (0.3)	More sections applicable .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—

22.4 (2)	CLASSIFICATION		---
22.4 (2.2)	Type of protection (Class 0 excluded).....	Class I	—
22.4 (2.3)	Degree of protection (Requirement: Ordinary) .....	IP 67	—
22.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces.....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire not suitable for direct mounting on normally flammable surfaces.....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
22.4 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
Annex B (-)	Classification code	X   1 / 0   AB**E   *60	—

22.5 (3)	MARKING		---
22.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
22.5 (3.3)	Additional information		---
	Language of instructions	Spanish/English	P
22.5 (3.3.1)	Combination luminaires		NA
22.5 (3.3.2)	Nominal frequency in Hz	50/60	P
22.5 (3.3.3)	Operating temperature		NA
22.5 (3.3.4)	Symbol or warning notice		NA
22.5 (3.3.5)	Wiring diagram		P
22.5 (3.3.6)	Special conditions		NA
22.5 (3.3.7)	Metal halide lamp luminaire – warning		NA
22.5 (3.3.8)	Limitation for semi-luminaires		NA
22.5 (3.3.9)	Power factor and supply current		P
22.5 (3.3.10)	Suitability for use indoors		NA
22.5 (3.3.11)	Luminaires with remote control		NA
22.5 (3.3.12)	Clip-mounted luminaire – warning		NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.5 (3.3.13)	Specifications of protective shields		NA
22.5 (3.3.14)	Symbol for nature of supply		NA
22.5 (3.3.15)	Rated current of socket outlet		NA
22.5 (3.3.16)	Rough service luminaire		NA
22.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type X for installation wiring connection	NA
22.5 (3.3.18)	Non-ordinary luminaires with PVC cable		NA
22.5 (3.3.19)	Protective conductor current in instruction if applicable		NA
22.5 (3.3.20)	Provided with information if not intended to be mounted within arms reach		NA
22.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
22.5.1 (-)	Supply voltage	230V	P
22.5.2 (-)	Classification according to annex B	X 1 AB**E *60 X 0 AB**E *60	P
22.5.3 (-)	Correct replacement lamp	FLUORESCENT	P
22.5.4 (-)	Range of ambient temperatures	25°C	P
22.5.5 (-)	Fuse ratings and/or indicator lamps	No replaceable	NA
22.5.6 (-)	Facilities to simulate normal supply failure	---	NA
22.5.7 (-)	Marked with correct battery replacement incl. battery type and rated voltage	Ni-Cd 4,8V 1,5Ah	P
	If non-replaceable batteries a label according to 3.2.b) of IEC 60598-1	Replaceable	NA
22.5.8 (-)	Battery marked with date of manufacture		P
	Space provided on battery label for installers marking		P
22.5.9 (-)	Correct lamp replacement for combined emergency luminaires	No combined luminaire	NA
	Green dot with min 5 mm diameter	See above	NA
	Instruction leaflet 22.5.10 – 12 and 22.5.14 – 22.5.16		---
22.5.10 (-)	Replacement of battery or luminaire	Instruction leaflet	P
22.5.11 (-)	Details of test facilities	Instruction leaflet	P

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
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22.5.12 (-)	Details of connection leads	No satellite luminaire	NA
22.5.14 (-)	Details of device which changes the mode of operation	Instruction leaflet	p
22.5.15 (-)	Photometric data available	Instruction leaflet	p
22.5.16 (-)	Any normal preparation procedure	Instruction leaflet	p
22.5.17 (-)	Position of the marking in 22.5.1 and 22.5.2		P
22.5.18 (-)	Provided with warning if intended for external plug and socket connections	For fixed connection	NA
22.5.19 (-)	Instruction leaflet specify if lamp and/or battery is/are non-replaceable	Replaceable	NA

<b>22.6 (4)</b>	<b>CONSTRUCTION</b>		---
22.6 (4.2)	Components replaceable without difficulty	Battery	P
22.6 (4.3)	Wireways smooth and free from sharp edges		P
22.6 (4.4)	Lampholders		P
22.6 (4.4.1)	Integral lampholder	G5	P
22.6 (4.4.2)	Wiring connection	See above	NA
22.6 (4.4.3)	Lampholder for end-to-end mounting	See above	NA
22.6 (4.4.4)	Positioning		---
	- pressure test (N) :	See above	NA
	After test the lampholder comply with relevant standard sheets and show no damage	See above	NA
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation	See above	NA
	- bending test (N) :	---, See above	NA
	After test the lampholder have not moved from its position and show no permanent deformation	See above	NA
22.6 (4.4.5)	Peak pulse voltage		NA
22.6 (4.4.6)	Centre contact		NA
22.6 (4.4.7)	Parts in rough service luminaires resistant to tracking	No for rough service	NA
22.6 (4.4.8)	Lamp connectors	See above	NA
22.6 (4.4.9)	Caps and bases correctly used		NA



Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.5)	Starter holders		---
	Starter holder in luminaires other than class II	No item	NA
	Starter holder class II construction	No item	NA
22.6 (4.6)	Terminal blocks		---
	Tails	Provided with luminaire	NA
	Unsecured blocks	See above	NA
22.6 (4.7)	Terminals and supply connections (See Annex 1)		---
22.6 (4.7.1)	Contact to metal parts	Fixed and not adjustable luminaire	NA
22.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
22.6 (4.7.3)	Terminals for supply conductors	Screw connection	P
22.6 (4.7.3.1)	Welded connections: (screw connection)		NA
	- stranded or solid conductor	See above	NA
	- spot welding	See above	NA
	- welding between wires	See above	NA
	- Type Z attachment	See above	NA
	- mechanical test according to 15.8.2	See above	NA
	- electrical test according to 15.9	See above	NA
	- heat test according to 15.9.2.3 and 15.9.2.4	See above	NA
22.6 (4.7.4)	Terminals other than supply connection	(certified screw terminal, see component list)	P
22.6 (4.7.5)	Heat-resistant wiring/sleeves	No item	NA
22.6 (4.7.6)	Multi-pole plug	No item	NA
	- test at 30 N	See above	NA
22.6 (4.8)	Switches:		---
	- adequate rating	No item	NA
	- adequate fixing	See above	NA
	- polarized supply	See above	NA
	- compliance with 61058-1 for electronic switches	See above	NA
22.6 (4.9)	Insulating lining and sleeves		---
22.6 (4.9.1)	Retainment	No item	NA
	Method of fixing .....	See above	NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.9.2)	Insulated linings and sleeves		---
	Resistant to a temperature > 20 °C to the wire temperature or	No item	NA
	a) & c) Insulation resistance and electric strength	See above	NA
	b) Ageing test. Temperature (°C) .....	See above	NA
22.6 (4.10)	Insulation of Class II luminaires		---
22.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		P
	Capacitors and switches	No item	NA
	Interference suppression capacitors according to IEC 60384-14	No item	NA
22.6 (4.10.2)	Assembly gaps:		---
	- not coincidental	No item	NA
	- no straight access with test probe	See above	NA
22.6 (4.10.3)	Retainment of insulation:		---
	- fixed	Fixed with 2 screws	NA
	- unable to be replaced; luminaire inoperative	No possible incorrect replacement	P
	- sleeves retained in position	No item	NA
	- lining in lampholder	No item	NA
22.6 (4.11)	Electrical connections		---
22.6 (4.11.1)	Contact pressure		P
22.6 (4.11.2)	Screws:		---
	- self-tapping screws	No item	NA
	- thread-cutting screws	No item	NA
22.6 (4.11.3)	Screw locking:		---
	- spring washer	No item	NA
	- rivets	No item	NA
22.6 (4.11.4)	Material of current-carrying parts	Brass > 50% copper	P
22.6 (4.11.5)	No contact to wood or mounting surface		P
22.6 (4.11.6)	Electro-mechanical contact systems		NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.12)	Mechanical connections and glands		---
22.6 (4.12.1)	Screws not made of soft metal		NA
	Screws of insulating material	Metallic	P
	Torque test: torque (Nm); part "qccess suply wires connection.....: :	0,5 Nm	NA
	Torque test: torque (Nm); screws for lamp change 3,9mm .....: :	1,2Nm	P
	Torque test: torque (Nm); part .....: :	---	NA
22.6 (4.12.2)	Screws not made of soft metal		NA
22.6 (4.12.4)	Locked connections:		NA
	- fixed arms; torque (Nm) .....: :	No item	NA
	- lampholder; torque (Nm) .....: :	No item	NA
	- push-button switches; torque 0,8 Nm .....: :	No item	NA
22.6 (4.12.5)	Screwed glands; force (Nm).....: :	Moulded 6,25	P
22.6 (4.13)	Mechanical strength		---
22.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) .....: :	---	NA
	- other parts; energy (Nm).....: :	0,35	P
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers		P
22.6 (4.13.3)	Straight test finger		P
22.6 (4.13.4)	Rough service luminaires		----
	- IP54 or higher	No for rough service	NA
	a) fixed	See above	NA
	b) hand-held	See above	NA
	c) delivered with a stand	See above	NA
	d) for temporary installations and suitable for mounting on a stand	See above	NA
22.6 (4.13.6)	Tumbling barrel	No plug-ballast/transformer	NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.14)	Suspensions and adjusting devices, no item		---
22.6 (4.14.1)	Mechanical load:;		NA
	A) four times the weight	See above	NA
	B) torque 2,5 Nm	See above	NA
	C) bracket arm; bending moment (Nm).....:	---, see above	NA
	D) load track-mounted luminaires	See above	NA
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....	---, see above	NA
	Metal rod. diameter (mm) .....	---, see above	NA
	Fixed luminaire or independent control gear without fixing devices	See above	NA
22.6 (4.14.2)	Load to flexible cables, no item		NA
	Mass (kg) .....	---, see above	NA
	Stress in conductors (N/mm <sup>2</sup> ) .....	---, see above	NA
	Mass (kg) of semi-luminaire .....	---, see above	NA
	Bending moment (Nm) of semi-luminaire .....	---, see above	NA
22.6 (4.14.3)	Adjusting devices:; no item		NA
	- flexing test; number of cycles .....	---, see above	NA
	- strands broken	See above	NA
	- electric strength test afterwards	See above	NA
22.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	No item	NA
22.6 (4.14.5)	Guide pulleys	No item	NA
22.6 (4.14.6)	Strain on socket-outlets	No item	NA
22.6 (4.15)	Flammable materials:		NA
	- glow-wire test 650 °C	See clause 13.3	P
	- spacing ≥ 30 mm	See above	NA
	- screen withstanding test of 13.3.1	See above	NA
	- screen dimensions	See above	NA
	- no fiercely burning material	See above	NA
	- thermal protection	See above	NA
	- electronic circuits exempted	See above	NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear, (Electronic control device)		---
	a) construction	See above	NA
	b) temperature sensing control	See above	NA
	c) surface temperature	See above	NA
22.6 (4.16)	Luminaires for mounting on normally flammable surfaces		---
	No lamp control gear	Electronic control device	NA
22.6 (4.16.1)	Lamp control gear spacing:		---
	- spacing 35 mm	See above	NA
	- spacing 10 mm	See above	NA
22.6 (4.16.2)	Thermal protection:		---
	- in lamp control gear	See above	NA
	- external	See above	NA
	- fixed position	See above	NA
	- temperature marked lamp control gear	See above	NA
22.6 (4.16.3)	Design to satisfy the test of 12.6	See above	NA
22.6 (4.17)	Drain holes	No drain hole	NA
	Clearance at least 5 mm	See above	NA
22.6 (4.18)	Resistance to corrosion:, Thermoplastic enclosure		---
22.6 (4.18.1)	- rust-resistance	See above	NA
22.6 (4.18.2)	- season cracking in copper	See above	NA
22.6 (4.18.3)	- corrosion of aluminium	See above	NA
22.6 (4.19)	Ignitors compatible with ballast	No ítem	NA
22.6 (4.20)	Rough service vibration	No for rough service	NA
22.6 (4.21)	Protective shield:, no item		NA
22.6 (4.21.1)	Shield fitted	See above	NA
	Shield of glass if tungsten halogen lamps	See above	NA
22.6 (4.21.2)	Particles from a shattering lamp not impair safety	See above	NA
22.6 (4.21.3)	No direct path	See above	NA
22.6 (4.21.4)	Impact test on shield	See above	NA
	Glow-wire test on lamp compartment	See above	NA
22.6 (4.22)	Attachments to lamps	No ítem	NA

Apdo.	Requisito – Ensayo	Resultado - Nota	Veredicto
22.6 (4.23)	Semi-luminaires comply Class II	No semiluminaire	NA
22.6 (4.24)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)		NA
22.6 (4.25)	No sharp point or edges		P
22.6 (4.26)	Short-circuit protection:, no SELV parts		NA
22.6 (4.26.1)	Uninsulated accessible SELV parts	See above	NA
22.6 (4.26.2)	Short-circuit test	See above	NA
22.6 (4.26.3)	Test chain according to Figure 29	See above	NA
22.6.1 (-)	No glow starters in circuit in start of or during the emergency mode		NA
22.6.2 (-)	Lamp control gears	According to IEC 61347-2-7 and IEC 61347-2-13, see applicable requirements	P
22.6.3 (-)	Failure of one luminaire not affect other	Protection fuse	P
22.6.5 (-)	Circuit separation (self-contained lum.)	Electronic ballast not tested	OBS (1)
22.6.6 (-)	Circuit separation (centrally supplied lum.)	No combined luminaire	NA
22.6.7 (-)	Charging device		P
	Indicator lamp and colour	Green indicator lamp	P
22.6.8 (-)	Battery requirements	Minimum 4 years warranty	P
22.6.9 (-)	Safety device	Electronic ballast not tested	OBS (1)
22.6.10 (-)	No switch		P
22.6.11 (-)	Failure of lamp(s)		
22.6.12 (-)	Current limiting device	Battery element nr.:5	---
	Discharge current	Max /Mea: 2,2 mA / <0,1mA	P
	Battery voltage	Min /Mea: 3,2 V / 4,02 V	P
22.6.13 (-)	Influence in emergency mode		P
22.6.14 (-)	Charging device	Remote inhibition	P
22.6.15 (-)	Influence on luminaire with remote inhibiting facility		P
22.6.16 (-)	Operation of remote control		P
22.6.17 (-)	Influence on luminaire with rest mode facility		P
22.6.18 (-)	Current drain	Max /Mea: 2,2 mA / <0,1mA	P
22.6.19 (-)	Lamp voltage		NA

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22.7 (11)	CREEPAGE DISTANCES AND CLEARANCES		---
	Working voltage (V).....:	230VAC	—
	Voltage form	Sinusoidal <input checked="" type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	< 600 <input checked="" type="checkbox"/> > 600 <input type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	—
	Rated pulse voltage (kV).....:	<2	—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) .....	Mea: cr >3,3; cl >3,3 Min: cr 2,5; cl 1,5	P
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm) .....	cr(mea: :>6,5 / min:5) cl(mea:>6,5 / min:3)	P
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm).....:	cr(mea:3,1 / min:2,5) cl(mea:3,1 / min:1,5)	P
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm) .....	No external metal parts	NA
	(5) Not used		—
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm).....:	cr(mea: :>6,5 / min:5) cl(mea:>6,5 / min:3)	P

22.8 (7)	PROVISION FOR EARTHING		---
22.8 (7.2.1 + 7.2.3)	Accessible metal parts	External parts only thermoplastic, earthed internal metallic plate accessible in luminaire installation	P
	Metal parts in contact with supporting surface	See above	NA
	Resistance < 0,5 Ω	0,18	P
	Self-tapping screws used	See above	NA
	Thread-forming screws		P
	Thread-forming screw used in a groove	See above	NA
	Earth makes contact first	Certified terminal	P
22.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		NA
22.8 (7.2.4)	Locking of clamping means	Rivet	P

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	Compliance with 4.7.3	See above	NA
	Terminal blocks with integrated screwless earthing contacts tested according Annex V	Certified terminal block	P
22.8 (7.2.5)	Earth terminal integral part of connector socket		NA
22.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
22.8 (7.2.7)	Electrolytic corrosion of the earth terminal	Brass	P
22.8 (7.2.8)	Material of earth terminal	Brass	P
	Contact surface bare metal		P
22.8 (7.2.10)	Class II luminaire for looping-in	Class I	NA
	Double or reinforced insulation to functional earth	Class I	NA
22.8 (7.2.11)	Earthing core coloured green-yellow	No earthing internal wires	NA
	Length of earth conductor	See above	NA

<b>22.9 (14)</b>	<b>SCREW TERMINALS</b>		---
	Separately approved; component list	(see Annex 1)	P
	Part of the luminaire	See above	NA

<b>22.9 (15)</b>	<b>SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS</b>		---
	Separately approved; component list		P
	Part of the luminaire		NA

<b>22.10 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		---
22.10 (5.2)	Supply connection and external wiring		---
22.10 (5.2.1)	Means of connection .....	Terminals	P
22.10 (5.2.2)	Type of cable.....	---, not provided	NA
	Nominal cross-sectional area (mm <sup>2</sup> ).....	---	NA
	Cables equal to IEC 60227 or IEC 60245	---	NA
22.10 (5.2.3)	Type of attachment, X, Y or Z	Type X, for installation wiring connection	NA
22.10 (5.2.5)	Type Z not connected to screws	Type X	NA
22.10 (5.2.6)	Cable entries:		---
	- suitable for introduction	Gland	P
	- adequate degree of protection	See above	P



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22.10 (5.2.7)	Cable entries through rigid material have rounded edges		NA
22.10 (5.2.8)	Insulating bushings:, no metal parts, (thermoplastic enclosure)		---
	- suitably fixed	See above	NA
	- material in bushings	See above	NA
	- material not likely to deteriorate	See above	NA
	- tubes or guards made of insulating material	See above	NA
22.10 (5.2.9)	Locking of screwed bushings	No item	NA
22.10 (5.2.10)	Cord anchorage: Gland		---
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
22.10 (5.2.10.1)	Cord anchorage for type X attachment:		---
	a) at least one part fixed		P
	b) types of cable		P
	c) no damaging of the cable		P
	d) whole cable can be mounted		P
	e) no touching of clamping screws		P
	f) metal screw not directly on cable	No metal screw	NA
	g) replacement without special tool		P
	Glands not used as anchorage	Suitable for recommended type of cables	NA
	Labyrinth type anchorages	No item	NA
22.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment	See above	NA
22.10 (5.2.10.3)	Tests:		---
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) .....: 60		P
	- torque test: torque (Nm) .....: 0,25		P
	- displacement $\leq$ 2 mm	<1,4mm	P

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	- no movement of conductors	See above	NA
	- no damage of cable or cord	See above	NA
22.10 (5.2.11)	External wiring passing into luminaire	Remote control, not provided	NA
22.10 (5.2.12)	Looping-in terminals	No ítem	NA
22.10 (5.2.13)	Wire ends not tinned	No tinned	P
	Wire ends tinned: no cold flow	See above	NA
22.10 (5.2.14)	Mains plug same protection	No plug	NA
	Class III luminaire plug	See above	NA
22.10 (5.2.16)	Appliance inlets (IEC 60320)	No inlet	NA
	Appliance couplers of class II type	See above	NA
22.10 (5.2.17)	No standardized interconnecting cables properly assembled	No interconnecting cables	NA
22.10 (5.2.18)	Used plug in accordance with		NA
	- IEC 60083	No plug	NA
	- other standard	See above	NA
22.10 (5.3)	Internal wiring		P
22.10 (5.3.1)	Internal wiring of suitable size and type		---
	Through wiring		---
	- not delivered/ mounting instruction	Delivered	NA
	- factory assembled		P
	- socket outlet loaded (A).....: No item		NA
	- temperatures .....: (see Annex 2)		P
	Green-yellow for earth only	No item	NA
22.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring (only battery wiring)		---
	Cross-sectional area (mm <sup>2</sup> ).....: ---		NA
	Insulation thickness		NA
	Extra insulation added where necessary		NA
22.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		---
	Adequate cross-sectional area and insulation thickness	battery wiring	P
22.10 (5.3.1.3)	Double or reinforced insulation for class II	No metal parts	NA
22.10 (5.3.1.4)	Conductors without insulation	Insulated	NA

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22.10 (5.3.1.5)	SELV current-carrying parts	No SELV parts	NA
22.10 (5.3.1.6)	Insulation thickness other than PVC or rubber	PVC	NA
22.10 (5.3.2)	Sharp edges etc.		---
	No moving parts of switches etc.	No item	NA
	Joints, raising/lowering devices	No item	NA
	Telescopic tubes etc.	No item	NA
	No twisting over 360°		P
22.10 (5.3.3)	Insulating bushings: (no metal parts)		---
	- suitable fixed	See above	NA
	- material in bushings	See above	NA
	- material not likely to deteriorate	See above	NA
	- cables with protective sheath	See above	NA
22.10 (5.3.4)	Joints and junctions effectively insulated	No item	NA
22.10 (5.3.5)	Strain on internal wiring	No external	NA
22.10 (5.3.6)	Wire carriers		NA
22.10 (5.3.7)	Wire ends not tinned		NA
	Wire ends tinned: no cold flow		NA
22.10.1 (-)	Permanently connected		P
<b>22.11 (8)</b>	<b>PROTECTION AGAINST ELECTRIC SHOCK</b>		---
22.11 (8.2.1)	Live parts not accessible with standard test finger		P
	Basic insulated parts not used on the outer surface without appropriate protection	Double or reinforced insulation	P
	Basic insulated parts not accessible with standard test finger on portable and adjustable luminaires	Fixed luminaire	NA
	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arms reach, on wall-mounted luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements	Fixed luminaire	NA
	Basic insulation only accessible under lamp or starter replacement		NA
	Protection in any position		P

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	Double-ended tungsten filament lamp		NA
	Insulation lacquer not reliable	Not used	NA
	Double-ended high pressure discharge lamp		NA
	Relevant warning according to 3.2.18 fitted to the luminaire		NA
22.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position	Fixed	NA
22.11 (8.2.3.a)	Class II luminaire: (Class I luminaria with parts of class II)		---
	- basic insulated metal parts not accessible during starter or lamp replacement	Nor lamp neither starterreplaceable	NA
	- basic insulation not accessible other than during starter or lamp replacement	Nor lamp neither starterreplaceable o replaceable lamp	NA
	- glass protective shields not used as supplementary insulation	No glass	NA
22.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed	No lampholder	NA
22.11 (8.2.3.c)	Class III luminaires with exposed SELV parts: class I luminaire		---
	Ordinary luminaire:		---
	- touch current .....	See above	NA
	- no-load voltage .....	See above	NA
	Other than ordinary luminaire:		---
	- nominal voltage .....	See above	NA
22.11 (8.2.4)	Portable luminaire: fixed luminaire		---
	- protection independent of supporting surface	See above	NA
	- terminal block completely covered	See above	NA
22.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
22.11 (8.2.6)	Covers reliably secured		P
22.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$	$<0,1 \mu\text{F}$	---
	Portable plug connected luminaire with capacitor	See above	NA
	Other plug connected luminaire with capacitor	See above	NA
	Discharge device on or within capacitor	See above	NA
	Discharge device mounted separately	See above	NA

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<b>22.12 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		---
22.12 (12.3)	Endurance test:		P
	- mounting-position .....	Under ceiling	---
	- test temperature (°C) .....	35	---
	- total duration (h) .....	10 cycles of 36hours	---
	- supply voltage: Un factor; calculated voltage (V) :	230,0 V ( V <sub>NOM MÁX</sub> )	---
	- lamp used .....	8W	---
22.12 (12.3.2)	After endurance test:		---
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system	No track system fixation	NA
	- marking legible		P
	- no cracks, deformation etc.		P
22.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
22.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
22.12 (12.6)	Thermal test (failed lamp control gear condition):	Electronic ballast	NA
22.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....	See above	---
	- case of abnormal conditions.....	---	---
	- electronic lamp control gear	Yes	----
	- measured winding temperature (°C): at 1,1 Un ..	---	---
	- measured mounting surface temperature (°C) at 1,1 Un .....	----	NA
	- calculated mounting surface temperature (°C) ...:	---	NA
	- track-mounted luminaires	---	NA
22.12 (12.6.2)	Temperature sensing control		NA
	- case of abnormal conditions.....	---	---
	- thermal link	See above	NA
	- manual reset cut-out	See above	NA
	- auto reset cut-out	See above	NA
	- measured mounting surface temperature (°C) .....	See above	NA
	- track-mounted luminaires	See above	NA

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22.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		---
22.12 (12.7.1)	Luminaire without temperature sensing control		---
22.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W (LED lamp)		NA
	Test method 12.7.1.1 or Annex V .....	---	---
	Test according to 12.7.1.1:		NA
	- case of abnormal conditions		---
	- Ballast failure at supply voltage (V) .....	---	---
	- Components retained in place after the test		NA
	- Test with standard test finger after the test		NA
	Test according to Annex V:		---
	- case of abnormal conditions		---
	- measured winding temperature (°C): at 1,1 Un ...:		---
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		---
	- calculated temperature of fixing point/exposed part (°C).....:	---	---
	Ball-pressure test:		NA
	- part tested; temperature (°C) .....		NA
	- part tested; temperature (°C) .....	---	NA
22.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA, LED lamp, bobbinate <10VA		NA
	- case of abnormal conditions		---
	- measured winding temperature (°C): at 1,1 Un ...:		---
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		---
	- calculated temperature of fixing point/exposed part (°C).....:		---
	Ball-pressure test:		NA
	- part tested; temperature (°C) .....	---	NA
	- part tested; temperature (°C) .....	---	NA
22.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA	Bobbinate in electronic ballast	P
	- case of abnormal conditions	Secondary bobbinate shortcircuit	---

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	- Components retained in place after the test		P
	- Test with standard test finger after the test		P
22.12 (12.7.2)	Luminaire with temperature sensing control (comply with 12.7.1.3)		NA
	- thermal link	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C): .....	---	—
	Ball-pressure test:		NA
	- part tested; temperature (°C) .....	---	NA
	- part tested; temperature (°C) .....	---	NA
22.12.2 (-)	Emergency mode 22.12.3 to 22.12.5	(see Annex 2)	P
22.12.6 (-)	Additional thermal test	(see Annex 2)	P
22.12.7 (-)	Rated lumen output		P

<b>22.13 (9)</b>	<b>RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE</b>		---
22.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP .....	IP67	—
	- mounting position during test .....	Fixed to wall	—
	- fixing screws tightened; torque (Nm) .....	Gland 4,2Nm	—
	- tests according to clauses .....	9.2.2 and 9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire	IP6X	NA
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or SELV parts or where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry	No drain holes	NA
	e) no water in watertight luminaire	No watertight luminaire	P
	f) no contact with live parts (IP 2X)	IP6X	NA

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	f) no entry into enclosure (IP 3X and IP 4X)	IP6X	NA
	f) no contact with live parts (IP3X and IP4X)	IP6X	NA
	g) no trace of water on part of lamp requiring protection from splashing water		NA
	h) no damage of protective shield or glass envelope	No glass	NA
22.13 (9.3)	Humidity test 48 h	25°C 93%	P

<b>22.14 (10)</b>	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		---
22.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....		---
	Insulation resistance (MΩ)		---
	SELV:		---
	- between current-carrying parts of different polarity.....	No SELV parts	NA
	- between current-carrying parts and mounting surface .....	No SELV parts	NA
	- between current-carrying parts and metal parts of the luminaire .....	No SELV parts	NA
	Other than SELV:		
	- between live parts of different polarity .....	>10 <sup>3</sup> MΩ (min. 2 MΩ) (Electronic ballast disconnected)	P
	- between live parts and mounting surface .....	>10 <sup>3</sup> MΩ (min. 4 MΩ) (and external enclosure)	P
	- between live parts and metal parts .....	>10 <sup>3</sup> MΩ (min 2MΩ)	P
	- between live parts of different polarity through action of a switch.....	No switch	NA
22.14 (10.2.2)	Electric strength test		---
	Dummy lamp	No ignitor	NA
	Luminaires with ignitors after 24 h test	No ignitor	NA
	Luminaires with manual ignitors	No ignitor	NA



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	Test voltage (V):	1460V (basic insulation) 2920V (reinforced or double insulation)	P
	SELV:		---
	- between current-carrying parts of different polarity.....:	No SELV parts	NA
	- between current-carrying parts and mounting surface.....:	See above	NA
	- between current-carrying parts and metal parts of the luminaire.....:	See above	NA
	Other than SELV:		
	- between live parts of different polarity.....:	(Electronic ballast disconnected)	NA
	- between live parts and mounting surface.....:	Double insulation, (and external enclosure)	P
	- between live parts and metal parts.....:		P
	- between live parts of different polarity through action of a switch.....:	No switch	NA
22.14 (10.3)	Touch current (mA).....:	<0,1mA (max: 0,7mA peak)	P

<b>22.15 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		<b>---</b>
22.15 (13.2.1)	Ball-pressure test:		---
	- Enclosure, lateral caps 75 (°C).....:	<1,4mm	P
	- Enclosure, difusser; 75 (°C).....:	<1,4mm	P
	- Internal plastic support, transparent; 125 (°C).....:	<1,4mm	P
	- Internal plastic support, white; 125 (°C).....:	<1,4mm	P
	- PCB LED board; 125 (°C).....:	<1,4mm -	P
22.15 (13.3.1)	Needle flame test (10 s): ---		---
	- PCB LED board.....:	---	P
	- Internal plastic support, transparent.....:	---	P
	- Internal plastic support, white.....:	---	P
22.15 (13.3.2)	Glow-wire test (650°C):		---
	- intermediate cover.....:	---	NA
	- part tested.....:	---	NA

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22.15 (-)	Glow-wire test (850°C): (only for external parts)		---
	- Enclosure, cap.....	---	P
	- Enclosure, difusser .....	---	P
	- part tested .....	---	NA
22.15 (13.4.1)	Tracking test: part tested.....	IP65 enclosure	NA

<b>22.16 (-)</b>	<b>FUNCTIONAL SAFETY</b>		---
22.16.1 (-)	Rated lumen output	Rated: 100 lm	---
	50% of rated lumen output after 5 seconds of emergency mode	Measured: --- lm, see table	P
	100% of rated lumen output after 60 seconds of emergency mode until end of rated time of emergency operation	Measured: --- lm, see table	P
	Emergency lighting for high risk area, 100% of rated lumen output after 0,5s of emergency mode until end of rated time of emergency operation	Measured:--- No for high risk area	NA
	Self contained luminaires, charge period of 24 hours at 0,9 UN MIN	Vcharge: 207V	----
	Emergency luminaire supplied by central source, supplied at 0,85 U <sub>N MIN</sub> , measurements after thermal stabilization	V=---, self contained	---

Lumen output measurement												
Reference lamp measurement							I <sub>COR</sub> (lx)	I <sub>MEDIDA</sub> (lx)	Φ <sub>ASIGNADO</sub> (lm)			
							178,0	550,3	1341			
Model	Measured Illuminance (lx)						Luminous flux output (lm)					Φ <sub>MÍN</sub> rated. (lm)
	I <sub>COR</sub>	5"	1'	5'	60'	180'	5"	1'	5'	60'	180'	
EMELUX PERMANENTE	173,5	159,6	159,3	158,9	158,6	---	399,0	398,3	397,3	396,,5	---	300
EMELUX NO PERMANENTE	173,5	186,8	183,6	182,0	179,4	---	467,0	459,0	455,0	448,5	---	300

22.16.2 (-)	Photometric data		P
22.16.3 (-)	Photometric measurements	See Annex 1 of this report	P
22.16.4 (-)	Colour-rendering index	Not for evacuation lighting	NA
22.16.5 (-)	Illuminance and luminance requirements	Not for safety signalling	NA

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22.17 (-)	CHANGEOVER OPERATION		---
22.17.1 (-)	Changeover test	V <sub>MÍN</sub> : 138,0 V (0,6 V <sub>n</sub> ) V <sub>MAX</sub> : 195,5 V (0,85 V <sub>n</sub> ) Measured : 169 V	P
22.17.2 (-)	Rated lumen output		P
22.17.3 (-)	Changeover test		P
	Rated lumen output		P

Lumen output measurement					
Reference lamp measurement			I <sub>COR</sub> (lx)	I <sub>MEDIDA</sub> (lx)	Φ <sub>ASIGNADO</sub> (lm)
			178,0	550,3	1341
Model	I <sub>COR</sub>	Measured Illuminance (lx)	Luminous flux output (lm)		Φ <sub>MÍN</sub> rated. (lm)
E MELUX LED PERMANENTE	173,5	159,5	398,8		300
E MELUX LED NO PERMANENTE	173,5	180,7	451,8		300

22.18 (-)	HIGH TEMPERATURE OPERATION					---
	Operation at 70°C		50% measured value at ta after 1h			P
	Rated lumen output					P
Model	Illuminance (klx)					Minimim
	at 25°C		At 70°C			
	1min	1min	5min	15min	1h	
E MELUX LED PERMANENTE	2,84	2,55	2,55	2,53	2,51	1,42
E MELUX LED NO PERMANENTE	3,26	2,93	2,92	2,90	2,85	1,63

22.19 (-)	BATTERY CHARGERS FOR SELF-CONTAINED EMERGENCY LUMINAIRES		---
22.19.1 (-)	Charge performance	243,8 V ( 1'06 x V <sub>N</sub> )	P
22.19.2 (-)	Compliance with IEC 60742	Manufacturer declaration of conformity	OBS (1)

22.20 (-)	TEST DEVICES FOR EMERGENCY OPERATION		---
22.20.1 (-)	Device for simulation failure	Remote testing device	P
22.20.2 (-)	Influence of remote testing device		P
22.20.3 (-)	Indication colour	No indicarion	NA

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<b>ANNEX A: Batteries for emergency luminaires</b>			---
A.1	Type of batteries	Ni-Cd	---
A.2	Battery conform to relevant standard	Manufacturer declaration	P
	Luminaire operate within specific tolerances		P
A.3	Battery capacity	1500mAh	---
A.4	Sealed nickel cadmium batteries		---
A.4.1	Battery conform to IEC 60285	Manufacturer declaration	P
A.4.2.a	Ambient air temperature $\leq 50\text{ }^{\circ}\text{C}$	39,2°C, see thermal tests IEC 60598-2-22	P
A.4.2.b	Overcharge rate $\leq 0,08\text{ C5A}$	243,8 V ( $1'06 \times V_N$ )	P

Model	Charge current (mA)				Maximum overcharge index 0,08 C <sub>5</sub> A (mA)
	1 min	5 min	30 min	24h	
EMELUX LED	93,2	96,1	99,6	78,5	120

A.4.2.c	Ambient temperature of the cells $\geq 5\text{ }^{\circ}\text{C}$		P
A.4.2.d	Discharge rates $\leq 0,6\text{ C5A}$ for 1h and $\leq 0,25\text{ C5A}$ for 3h	$\leq 0,6\text{ C5A}$	P

Model	Autonomy	Discharge current (mA)				Maximum (mA)
		1 min	5 min	15 min	1 h	
EMELUX LED	1h	838	876	894	850	900

A.5	Valve regulated lead acid batteries		---
A.5.1	Battery conform to relevant part of IEC 60869-2 or IEC 61056-1	Valve regulated lead acid batteries	NA
A.5.2.a	Ambient air temperature $\leq 30\text{ }^{\circ}\text{C}$ or $\leq 25\text{ }^{\circ}\text{C}$	See above	NA
A.5.2.b	Recharge current $\leq 0,4\text{ C20}$	See above	NA
A.5.2.c	Discharge rates $\leq 0,4\text{ C20}$ for 1h and $\leq 0,17\text{ C20}$ for 3h	See above	NA
A.5.2.d	Ripple current $\leq 0,1\text{ C20}$	See above	NA
A.5.2.e	Ambient temperature of the cells $\geq 5\text{ }^{\circ}\text{C}$	See above	NA
A.6	Ambient temperature of the cells measured after 48 h		---
A.7	Alternative operating parameters and evidence if operating outside limits in A.4 and A.5		NA
A.8	Battery only replaced by a competent person		P

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<b>ANNEX B: Luminaire classification</b>			---
	Classified and marked according Annex B	X 1 AB**E *60 X 0 AB**E *60	P

<b>ANNEX C: Luminance measurements</b>			---
C.1	Contrast measurements	No safety signalling	---
C.2	On site photometric tests	No safety signalling	---

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ANNEX ZB	DIVERGENCES A		---
22.3.8	The installation of elements next to the luminaire is not allowed	France: Fire safety regulations in buildings open to the public. Clause EC 15	NA
22.4	Self-contained safety luminaires must be provided with a means of "sleep mode", which must be added into equipment or outside.	Spain: RD 842/2002: REBT ITC-BT-28 clause 3.4.1,	P
22.5.18 22.10.1	In public buildings electrical installations should only have fixed electrical accessories.	Dinamarca: Regulation strong currents, sec 6 clause 805.56 France: Safety regulation in public buildings. Clause EL 10, chapter 1	P
22.6.6 22.3.7	Lamps for general purpose lighting and lamps for emergency lighting should be embedded in separate luminaires	France: Fire safety regulations in buildings open to the public. Clause EC 5, chapter 3, LED module	NA
22.13	Minimum IP degree of self-contained luminaires with fluorescent lamps should be IP 22	Spain: RD 842/2002: REBT ITC-BT-28 clause 3.4.1, IP65	NA
22.15	External parts of fixed or suspended luminaires must also withstand glow wire test at 850 ° C	Francia: : Fire safety regulations in buildings open to the public Clause EC 5 chapter 2	P
22.16.1	Autonomy of operation assigned to self-contained emergency luminaires used for emergency lighting must be at least one hour	Spain: RD 842/2002: REBT ITC-BT-28 clause 3.1.1 and 3.1.2, 3h	P
22.16.1	Minimum luminous flux output for self-contained emergency luminaires with incandescent lamps should be 30 lumen	Spain: RD 842/2002: REBT ITC-BT-28 clause 3.4.1, LED modules	NA
22.16.2/ 22.16.3	The characteristics of the products are based only on the assigned luminous flux and, therefore, the photometric characteristics of luminaires could not be provided or verified	Francia: Fire safety regulations in buildings open to the public Clause EC9 and EC10, provided	NA
22.17.1	Switching from the normal state to the state of emergency should occur when the normal power supply is less than 0.7 times the rated value	Spain:: RD 842/2002: REBT ITC-BT-28 cap. 3.1, (>161V)	P

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	<b>ANEXO 1: Tabla de componentes</b>	---
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objeto/parte	fabricante/ marca	modelo	Características técnicas	Norma	Marca de conformidad
Bornes	Tekox	3103	450V 24 A T110	EN 60998-2-2	VDE 40023331
Cableado interno	Ascable/Recael	H07Z1-R	450V/750V Type 2 1,5mm <sup>2</sup>	HD21-15:S1	AENOR 042/000966
Batería	Huanyu PowerSource	SC1500T	Ni-Cd 1,5Ah i <sub>DESC(MAX)</sub> :1,2 A	IEC 61951-1 IEC 60598-2-22	Declaración CE
Balasto electrónico	AIRFAL	KITAIRFAL5 Emerg.	---	IEC 61347-2-13	Declaración CE
Prensaestopas	Schlemmer	S-Tec	---	---	---
Envolvente, difusor y tapas	Polinter	PC 38002	Policarbonato GW850 UL94HB T <sub>vicat</sub> :140°C	---	---
Soportes internos plástico	Elix Polymers	ABS P2H-AT	---	---	---
LED	Refond	RF-WNMA30DS-ED	Exempt class T:-25...+85°C 30mA <sub>max</sub>	IEC 62471	SGS GZES110800 559131

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	<b>ANEXO 2: medidas de temperatura, ensayos de calentamiento del capítulo 12</b>		P
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	Type reference .....	EMELUX	—
	Lamp used .....	FLUORESCENTE	—
	Lamp control gear used .....	Integral	—
	Mounting position of luminaire .....	Under ceiling	—
	Supply wattage (W).....	12	—
	Supply current (mA) .....	0,084	—
	Calculated power factor .....	0,62	—
	Table: measured temperatures corrected for $t_a = 25\text{ °C}$ :		P
	- abnormal operating mode.....	Battery substituted by impedance aprox. $0\Omega$	—
	- test 1: 1,06 times rated voltage or 1,05 times rated wattage .....	243,8V (alert mode)	—
	- test 2: emergency mode.....	Supplied by battery (temperatures below than measured in test 1)	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....	---	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage .....	253V	—
	Through wiring or looping-in wiring loaded by a current of A during the test .....	No item	—



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Temperatura (°C) del componente o parte medida	Apartado 12.4 – normal							apartado12.5 – anormal		
	test 1		test 2		test 3		Max	test 4		Max
	a t <sub>a</sub>	a 25°C	a t <sub>a</sub>	a 25°C	a t <sub>a</sub>	a 25°C		a t <sub>a</sub>	a 25°C	
LED	47,4	49,5	---	---	---	---	85	51,6	53,0	---
Transformador (Kit emergenci)	79,0	81,1	---	---	---	---	100	99,3	100,7	150
Condensador (Kit aemergencia)	53,7	55,8	---	---	---	---	85	67,1	68,5	---
Cableado interno	42,7	44,8	---	---	---	---	90	49,1	50,5	---
Batería	43,2	45,3	---	---	---	---	50	---	---	---
Fijaciones transparentes	38,4	40,5	---	---	---	---	90	41,4	42,8	---
Soporte extremos blancos	33,2	35,3	---	---	---	---	90	35,0	36,4	---
Borne alimentación	34,4	36,5	---	---	---	---	110	38,2	39,6	---
Cableado externo	30,4	32,5	---	---	---	---	90	32,1	33,5	---
Difusor lado transparente	29,9	32,0	---	---	---	---	130	31,6	33,0	---
Cableado apretado	27,6	29,7	---	---	---	---	75	29,1	30,5	---
Difusor lado opaco gris	46,2	48,3	---	---	---	---	130	64,3	65,7	---
Superficie madera	29,6	31,7	---	---	---	---	90	31,3	32,7	130
Tapas laterales	27,8	29,9	---	---	---	---	130	30,4	31,8	---
Ambiente	22,9	25,0	---	---	---	---	---	23,6	25,0	---

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<b>4</b>	<b>GENERAL REQUIREMENTS</b>		---
4.4	Integral modules tested assembled in the luminaire	Integral module	P
4.5	Independent modules complies with requirements in IEC 60598-1	Integral module	NA

<b>5</b>	<b>GENERAL TEST REQUIREMENTS</b>		---
5.5			NA
	General conditions for tests in Annex A	(see Annex A), see above	NA

<b>6</b>	<b>CLASSIFICATION</b>		---
	Built-in module .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	Independent module .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	---
	Integral module .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	---
	For Integral module; Note to 1.2.1 in IEC 60598-1 applies.	Integral module, for emergency luminaire EMELUX LED	---

<b>7</b>	<b>MARKING</b>		---
7.1	Mandatory markings (integral module)		---
	a) mark of origin	See above	NA
	b) model number, type reference	See above	NA
	c1) constant voltage module; rated supply voltage and supply frequency	See above	NA
	c2) constant current module; rated supply current and supply frequency	See above	NA
	d) nominal power	See above	NA
	e) indication of connections, wiring diagram	See above	NA
	f) value of $t_c$ and place on the module	See above	NA
	g) eye protection	Exempt group risk	P
	h) symbol for built-in modules	See above	NA
	i) heat transfer temperature $t_d$	See above	NA
	j) power for heat-conduction $P_d$	See above	NA
	k) working voltage for insulation	See above	NA

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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7.2	Location of marking		---
	- marking of a), b), c) and f)	integral modules	NA
	- marking of d), e), g), h), i) and j)	integral modules	NA
	- marking of k)	integral modules	NA
	- integral modules a) to g) in literature	Instruction leaflet	P
7.3	Durable and legibility of marking		---
	- marking of a), b), c) and f) legible after test with water	integral modules	NA
	- marking of d) to j) inspection of compliance	integral modules	NA
<b>8</b>	<b>TERMINALS</b>		---
	Screw terminals according section 14 of IEC 60598-1.		---
	Separately approved; component list		NA
	Part of the luminaire		NA
	Screwless terminals according section 15 of IEC 60598-1:		---
	Separately approved; component list		NA
	Part of the luminaire		NA
	Connectors according IEC 60838-2-2:		---
	Separately approved; component list		NA
<b>9 (9)</b>	<b>PROVISION FOR PROTECTIVE EARTHING</b>		P
<b>10 (10)</b>	<b>PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS</b>		---
- (10.1)	Controlgear protected against accidental contact with live parts	Device protected by luminaire enclosure, see tests according clause 8 IEC 60598-1	NA
<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b> (tested as integral part of luminaire, see clause 22.14 UNE-EN 60598-2-22)		---
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		---
	For basic insulation $\geq 2 \text{ M}\Omega$ .....	See above	NA
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$ .....	See above	NA

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1	See above	NA
<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b> (tested as integral part of luminaire, see clause 22.14 UNE-EN 60598-2-22)		---
	Immediately after clause 11 electric strength test for 1 min	See above	---
	Basic insulation for SELV, test voltage 500 V	See above	NA
	Working voltage $\leq 50$ V, test voltage 500 V	See above	P
	Working voltage $> 50$ V $\leq 1000$ V, test voltage (V): ---		---
	Basic insulation, 2U + 1000 V	See above	NA
	Supplementary insulation, 2U + 1000 V	See above	NA
	Double or reinforced insulation, 4U + 2000 V	See above	NA
	No flashover or breakdown	See above	NA
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1	See above	NA
<b>13 (14)</b>	<b>FAULT CONDITIONS</b>		---
- (14)	When operated under fault conditions the controlgear: ---		---
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired	No live parts	NA
	Thermally protected controlgear does not exceed the marked temperature value	No thermal protection	NA
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table), no item	NA
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	NA
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		NA

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	NA
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table), no item	NA
- (14.5)	After the tests has been carried out on three samples:		---
	The insulation resistance $\geq 1 \text{ M}\Omega$ .....	$>10^3$	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.6)	Relevant fault condition tests with high-power supply		---
13.2	Module withstands overpower condition >15 min.	15,5V 250mA 3,9W Test, 15 min at 1,5P (5,8W)	P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		NA
	During the tests, tissue paper, spread below module, does not ignite		P

<b>15</b>	<b>CONSTRUCTION</b>		---
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P

<b>16</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		
	Creepage and distances and clearances in compliance with IEC 60598-1		
	Working voltage (V) .....	15Vdc, no requirement under 25V	---
	Voltage form	Sinusoidal <input type="checkbox"/> Non-sinusoidal <input checked="" type="checkbox"/>	---
	PTI	$< 600$ <input checked="" type="checkbox"/> $\geq 600$ <input type="checkbox"/>	---
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input checked="" type="checkbox"/> Category III <input type="checkbox"/>	---
	Rated pulse voltage (kV).....	$<1$	---

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) :	See above	NA
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm).....	See above	NA
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm) .....	See above	NA
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm) .....	---	NA
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm) .....	---	NA

<b>17 (17)</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		---
	Screws, current-carrying parts and connections in compliance with IEC 60598-1		---
(4.11)	Electrical connections		---
(4.11.1)	Contact pressure	No ítem	NA
(4.11.2)	Screws:		---
	- self-tapping screws	No ítem	NA
	- thread-cutting screws	No ítem	NA
(4.11.3)	Screw locking:		---
	- spring washer	No ítem	NA
	- rivets	No ítem	NA
(4.11.4)	Material of current-carrying parts		NA
(4.11.5)	No contact to wood or mounting surface		NA
(4.11.6)	Electro-mechanical contact systems		NA
(4.12)	Mechanical connections and glands		---
(4.12.1)	Screws not made of soft metal		NA
	Screws of insulating material		See above
	Torque test: torque (Nm); part .....		See above
	Torque test: torque (Nm); part .....		See above
	Torque test: torque (Nm); part .....		See above
(4.12.2)	Screws with diameter < 3 mm screwed into metal		NA

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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(4.12.4)	Locked connections:		---
	- fixed arms; torque (Nm) .....	No item	NA
	- lampholder; torque (Nm) .....	No item	NA
	- push-button switches; torque 0,8 Nm .....	No item	NA
(4.12.5)	Screwed glands; force (Nm) .....	No item	NA

<b>18 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		---
	Resistance to Heat, Fire and Tracking in compliance with IEC 61347-1 (clause numbers between parentheses refer to IEC 61347-1), (see tests in clause 22.15 UNE-EN 60598-2-22)		---
(18.1)	Ball-pressure test:		---
	- part tested.....	See above	NA
	- part tested.....	See above	NA
(18.2)	Test of printed boards		---
	- part tested.....	See above	NA
	- part tested.....	See above	NA
(18.3)	Glow-wire test (650°C):		---
	- part tested.....	See above	P
	- part tested.....	See above	P
(18.4)	Needle flame test (10 s):		---
	- part tested.....	See above	NA
	- part tested.....	See above	NA
(18.5)	Tracking test: (Enclosure IP65)		---
	- part tested.....	See above	NA
	- part tested.....	See above	NA

<b>19 (19)</b>	<b>RESISTANCE TO CORROSION</b>		---
	Rust protection:		---
	- test according 4.18.1 of IEC 60598-1	see clause 22.6 (4.18.1) UNE-EN 60598-2-22	NA
	- adequate varnish on the outer surface		NA

<b>20</b>	<b>INFORMATION FOR LUMINAIRE DESIGN</b>		---
	Information in Annex D (tested with luminaire)		---

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)

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<b>21</b>	<b>HEAT MANAGEMENT</b>		---
21.1	General		---
	Exchangeability is safeguarded by cap or base		NA
21.2	Heat-conducting foil and paste		---
	Heat-conducting foil delivered with the module if necessary		NA
21.4	Construction		---
	Electrical connection and mechanical holding are separate		NA

<b>14</b>	<b>TABLE: tests of fault conditions</b>		
Part	Simulated fault		Hazard
LED diode	Shortcircuit		NO
LED diode	Opencircuit		NO
---	---		---

<sup>1</sup>norma no incluida en el alcance de acreditación (A1:2013)



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<b>4</b>	<b>DESIGNATIONS</b>		---
4.1	Code disposed	---	---
4.2	IK code applied	IK 07	---
	IK 00	Not protected	NA
	IK 01	Energy 0.14 J	NA
	IK 02	Energy 0.2 J	NA
	IK 03	Energy 0.35 J	NA
	IK 04	Energy 0.5 J	NA
	IK 05	Energy 0.7 J	NA
	IK 06	Energy 1 J	NA
	IK 07	Energy 2 J	P
	IK 08	Energy 5 J	NA
	IK 09	Energy 10 J	NA
	IK 10	Energy 20 J	NA

<b>5</b>	<b>GENERAL CONDITIONS</b>		---
5.1	Environmental conditions according to standard	---	P
5.2	New and clean enclosure	---	P
5.3	Particular standard requirements:	Acc. To UNE EN 60598-1 clause 4.13	P
	- Number of tested sample	1	---
	- Mounting conditions	Fixed to surface	---
	- Preconditioning applied	None	---
	- Supplied test	No	---
	- Mobile parts	Not present	---
	- Number of impacts	3 impact in weakest point	---

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<b>6</b>	<b>TEST TO VERIFY PROTECTION AGAINST IMPACT DEGREE</b>		<b>---</b>
6.1	Test specified in this standard is a type test	---	---
6.2	Verification by applying impacts to the tested enclosure	---	---
	Tests devices in clause 7	---	---
6.3	Mounting according to manufacturer instructions	As normal use	---
	Tests with rigid support	Displacement $\leq$ 1 mm under IK test impacts	---
6.4	The number of impacts should be 5 in each exposed face unless the relevant product standard does not specify differently	The particular standard specifies a number of impacts 3	---
	The impacts should be evenly distributed on the sides of the enclosure under test. In no case should more than 3 shocks applied in the vicinity of the same point of the envelope	The particular standard specifies three hits on the point that seems weaker	---
	The particular product standard must specify the points of application of the impacts	The particular standard specifies three hits on the point that seems weaker, difusser central point	---
6.5	The particular product standard should specify the criteria on which the acceptance or rejection of the shell is based	See description of the acceptance criteria of the particular standard (clause 4.13 UNE EN 60598-1 I	---
	Acceptance criteria:	After IK07	---
	- There are no unacceptable damage		P
	- Safety is not affected		P
	- The reliability is not affected		P

<b>7</b>	<b>TEST DEVICE</b>		<b>---</b>
	Pendular hammer acc to UNEEN 60068-2-75:99	---	P
	Spring hammer acc. to UNE-EN 60068-2-75:99	Used pendular hammer	NA
	Vertical hammer acc. to UNE-EN60068-2-75:99	Used pendular hammer	NA

- Las medidas se han efectuado para un  $\Delta\gamma = 5^\circ$  y para un  $\Delta C = 90^\circ$  (planos C0, C90, C180 y C270), mediante un goniómetro de cabeza móvil operando según las recomendaciones de la publicación CIE nº 121:1996.
- Las medidas se han realizado alimentando la luminaria EMELUX LED PERMANENTE en estado de alerta
- Posición inicial de la luminaria, eje longitudinal paralelo al plano C90-C270

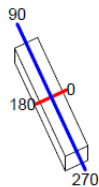
**TABLA DE DISTRIBUCIÓN**

<b>Luminaria</b>		<b>Ensayo</b>		<b>Lámpara</b>	
Código	14/31700518	Código	14/31700518	Código	
Nombre	EMELUX LED	Nombre	EMELUX LED	Número	1
Familia	AIRFAL	Fecha	14-05-2014	Posición	
Eficiencia	100.00%	Sist. de Coordenadas	C-G	Flujo Total	419.50 lm
<b>Tabla de Intensidad Luminosa cd</b>		<b>Tabla 1/1</b>			
		C 0.00	C 90.00	C 180.00	C 270.00
G 0.0	137.52	137.52	137.52	137.52	137.52
G 5.0	139.71	135.79	136.20	137.43	137.43
G 10.0	142.05	135.27	135.53	141.34	141.34
G 15.0	144.09	133.12	134.14	140.15	140.15
G 20.0	135.28	130.23	131.15	135.57	135.57
G 25.0	132.18	126.23	127.52	133.34	133.34
G 30.0	123.35	122.28	122.47	125.18	125.18
G 35.0	117.77	109.27	117.22	120.81	120.81
G 40.0	109.39	104.06	109.37	109.47	109.47
G 45.0	99.45	91.83	101.15	102.43	102.43
G 50.0	91.72	83.24	91.27	90.56	90.56
G 55.0	80.51	69.23	76.95	82.25	82.25
G 60.0	70.76	56.27	63.05	70.48	70.48
G 65.0	59.44	42.72	50.64	59.89	59.89
G 70.0	44.04	32.00	36.94	46.12	46.12
G 75.0	33.17	18.43	22.73	34.34	34.34
G 80.0	20.35	7.60	10.16	22.12	22.12
G 85.0	11.46	3.46	2.52	13.49	13.49
G 90.0	2.61	1.57	0.63	3.17	3.17

CURVAS POLARES

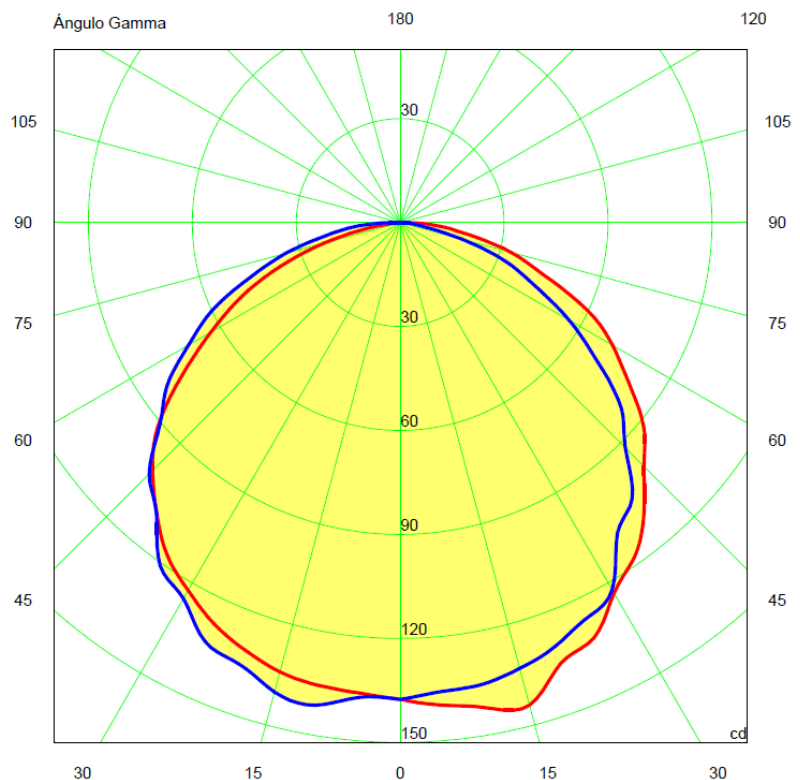
<b>Luminaria</b>		<b>Ensayo</b>		<b>Lámpara</b>		
Código	14/31700518	Código	14/31700518	Código		
Nombre	EMELUX LED	Nombre	EMELUX LED	Número	1	
Familia	AIRFAL	Fecha	14-05-2014	Posición		
Eficiencia	100.00%	Sist. de Coordenadas	C-G	Flujo Total	419.50 lm	
Valor Máximo	144.09 cd	Posición	C=0.00 G=15.00	Asimétrico		
Luminaria Rectangular	Longitud	380 mm	Anchura	80 mm	Altura	80 mm
Área Luminosa Rectangular	Longitud	310 mm	Anchura	80 mm	Altura	40 mm
Área Luminosa Horizontal		0.024800 m <sup>2</sup>	Área de Emisión sobre el Pl. 180°			0.012400 m <sup>2</sup>
Área de Emisión sobre el Plano 0°		0.012400 m <sup>2</sup>	Área de Emisión sobre el Pl. 270°			0.003200 m <sup>2</sup>
Área de Emisión sobre el Plano 90°		0.003200 m <sup>2</sup>	Área de deslumbramiento a 76°			0.018031 m <sup>2</sup>
Tipo de Simetría	Asimétrico	Máximo Ángulo Gamma		90		
Distancia de Ensayo	21.56	Flujo de Ensayo		419.50 lm		
Operador	OMG	Voltaje de la Fuente		230.00 V		
Temperatura	24.50 °C	Corriente de la Fuente				
Humedad	43.00 %	Fotocélula				
Notas	LED					
C.I.E.	46 79 95 100 100	D DIN 5040		A30		
F UTE	1.00 E	B NBN		BZ 5		

380mm x 80mm



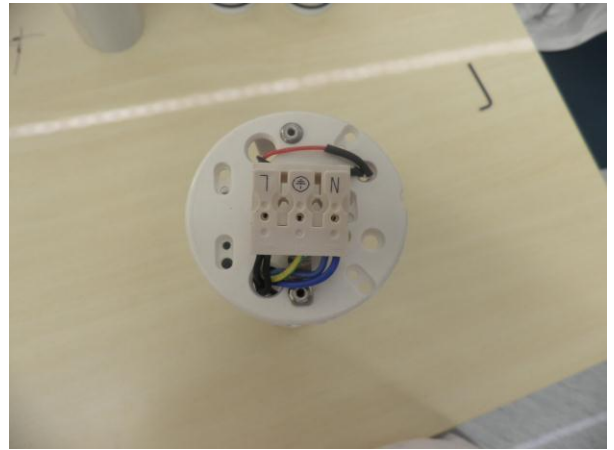
Semiplanos C  
180.0 — 0.0  
270.0 — 90.0

ULOR 0.00  
DLOR 100.00

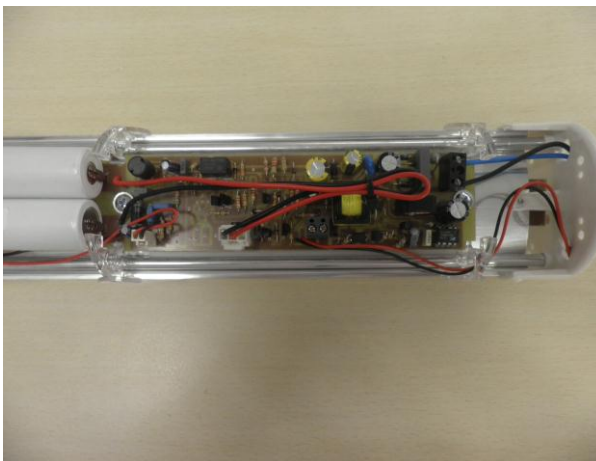




Vista exterior



Conexión alimentación



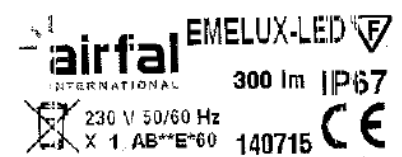
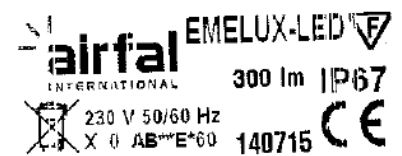
Balasto electrónico (versión permanente)



Balasto electrónico (versión no permanente)



Entrada cable



Etiquetas